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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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11/30/2001

Anthony Charles Bach

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12/30/2004

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EXAMINER

LEURIG, SHARLENE L

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/997,696

Applicant(s)

BACH ET AL.

Examiner

Sharlene Leung

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6, 7, 11, 12, 14 and 17-27 is/are pending in the application.
- 4a) Of the above claim(s) 17-22 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6, 23 and 25 is/are allowed.
- 6) ☒ Claim(s) 24, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 7, 11, 12 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>06212004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on October 5, 2004 has been entered and acknowledged by the examiner.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 24, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolfgang et al. (3,436,590) (of record).

Regarding claim 24, Wolfgang discloses a photomultiplier comprising a plurality of discrete dynodes (Figures 3 and 4, elements 49, 50, 45, 43, 47, 46, 44) arranged in a cascade so that the second and any subsequent dynodes each receive electrons from the preceding dynode, as shown by the dotted arrows. The dynodes can be considered to be discrete as they are separate from each other, as shown in Figure 3, and as Wolfgang discloses the annular segments being separated from each other by crests (45) (column 4, line 7-11). The dynodes are of curvilinear cross-section, as shown in Figure 4, and are arcuate about a common axis designated by the hole (3). Successive dynodes are disposed so that the cascade extends radially relative to the axis, as shown by the dotted arrows, wherein the dynodes are arranged in two coaxial,

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substantially planar, substantially disc-shaped arrays arranged parallel to and facing each other.

Regarding claim 26, Wolfgang discloses a photomultiplier comprising a plurality of dynodes (Figures 3 and 4, elements 49, 50, 45, 43, 47, 46, 44) arranged in cascade so that the second and any subsequent dynodes receive electrons from the preceding dynode, as shown by the dotted arrows. The dynodes are of curvilinear cross-section, as shown in Figure 4, and are arcuate about a common axis designated by the hole (3). Successive dynodes are disposed so that the cascade extends radially relative to the axis, as shown by the dotted arrows. The effective area of the dynodes changes linearly from dynode to dynode, since each successive dynode describes a larger circle, as shown in Figure 3. The linear change claimed is described as being "dynode to dynode"; any change between two successive dynodes can be represented linearly.

Regarding claim 27, Wolfgang discloses a photomultiplier comprising a plurality of dynodes (Figures 3 and 4, elements 49, 50, 45, 43, 47, 46, 44) arranged in cascade so that the second and any subsequent dynodes receive electrons from the preceding dynode, as shown by the dotted arrows. The dynodes are of curvilinear cross-section, as shown in Figure 4, and are arcuate about a common axis designated by the hole (3). Successive dynodes are disposed so that the cascade extends radially relative to the axis, as shown by the dotted arrows. At least alternate dynodes are spaced from each other successively along the axis, as shown in Figure 4, where dynodes such as (49) and (50) oppose each other along the axis and are successive, as shown by the dotted arrows.

Allowable Subject Matter

4. Claims 6, 23 and 25 are allowed.
5. The following is an examiner's statement of reasons for allowance:

Regarding claims 6 and 23, the prior art of record fails to teach or suggest the combination of limitations as set forth in claim 23, and specifically a photomultiplier having a plurality of dynodes of the claimed structure wherein the dynodes have curvilinear cross-sections which are sections through a set of toroidal surfaces having a common principal axis of rotation each intersected by one of a set of conical surfaces coaxial with the principal axis of rotation of the toroidal surfaces.

Regarding claim 25, the prior art of record fails to teach or suggest the combination of limitations as set forth in claim 25, and specifically a photomultiplier having a plurality of dynodes of the claimed structure wherein successive dynodes are alternately disposed on coaxial male and female conical surfaces.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Claims 7, 11, 12 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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7. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 7, the prior art of record fails to teach or suggest the combination of limitations as set forth in the claim, and specifically a photomultiplier having the structure of claim 24 wherein the effective area of at least one dynode is less than the effective area of the preceding dynode.

Regarding claim 11, the prior art of record fails to teach or suggest the combination of limitations as set forth in the claim, and specifically a photomultiplier having the structure of claim 27 wherein successive dynodes are alternately disposed on coaxial male and female conical surfaces.

Regarding claim 12, the prior art of record fails to teach or suggest the combination of limitations as set forth in the claim, and specifically a photomultiplier having the structure of claim 24 wherein at least one of the dynode arrays forms part of the vacuum envelope of the device.

Regarding claim 14, the prior art of record fails to teach or suggest the combination of limitations as set forth in the claim, and specifically a photomultiplier having the structure of claim 24 wherein the anode is between the dynode arrays and is either annular, part-annular or segmented.

8. The indicated allowability of claims 5-11 and 24 is withdrawn in view of the newly discovered reference(s) to Wolfgang et al. (3,436,590) (of record). Rejections based on the newly cited reference(s) are above.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharlene Leurig whose telephone number is (571) 272-2455. The examiner can normally be reached on Monday through Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sll



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